



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/573,697	03/13/2007	Dingyi Hong	U 016220-0	7117
140 7590 05/18/2010 LADAS & PARRY LLP 26 WEST 61ST STREET NEW YORK, NY 10023				
EXAMINER				
CUTLIFF, YATE KAI RENE				
ART UNIT		PAPER NUMBER		
1621				
NOTIFICATION DATE		DELIVERY MODE		
05/18/2010		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

nyuspatactions@ladas.com

Office Action Summary

Application No.

10/573,697

Applicant(s)

HONG ET AL.

Examiner

YATE' K. CUTLIFF

Art Unit

1621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 January 2010.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13, 15 - 21, 23 - 25, 27, 28 & 30 - 35 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 13, 15 - 21, 23 - 25, 27, 28 & 30 - 35 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 27 March 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsman's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Status of Claims

1. Claims 13, 15 – 21, 23 – 25, 27, 28, and 30 - 35 are pending.

Claims 1 – 12, 14, 22, 26 and 29 have been canceled

Claims 13, 15 – 21, 23 – 25, 27, 28, and 30 - 35 are rejected.

Response to Amendment

2. The amendment to claims 1 and new claims 33 - 35, submitted January 29, 2010 is acknowledged and entered.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 33 – 35 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.
5. The MPEP states that the proscription against the introduction of new matter in a patent application (35 U.S.C. 132 and 251) serves to prevent an applicant from adding information that goes beyond the subject matter originally filed. See *In re Rasmussen*, 650 F.2d 1212, 1214, 211 USPQ 323, 326 (CCPA 1981). Further, that the written description requirement prevents an applicant from claiming subject matter that was not

adequately described in the specification as filed. New or amended claims which introduce elements or limitations which are not supported by the as-filed disclosure violate the written description requirement. See, e.g., *In re Lukach*, 442 F.2d 967, 169 USPQ 795 (CCPA 1971) (subgenus range was not supported by generic disclosure and specific example within the subgenus range); *In re Smith*, 458 F.2d 1389, 1395, 173 USPQ 679, 683 (CCPA 1972) (a subgenus is not necessarily described by a genus encompassing it and a species upon which it reads). The fundamental factual inquiry is whether the specification conveys with reasonable clarity to those skilled in the art that, as of the filing date sought, applicant was in possession of the invention as now claimed. See, e.g., *Vas-Cath, Inc.*, 935 F.2d at 1563-64, 19 USPQ2d at 1117.

Claim 33 recites the exclusionary proviso set out below:

"...that are higher than can be achieved by the method if the fraction that is cooled and returned as cycled stream to the reaction zone were not water-depleted."

Examiner can not find support for this limitation in the body of the originally filed Application. Any negative limitation or exclusionary proviso must have basis in the original disclosure. (MPEP 2173.05(i)).

Response to Arguments

6. Applicant's arguments, see pages 6 – 9, filed January 29, 2010, with regard to the 35 USC 103(a) rejection of claims 13, 15 – 21, 23 - 25, 27, 28 and 30-32 have been

fully considered but they are not persuasive, for the reasons set out in the Office Action mailed September 29, 2009 and as set out below.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 13, 15 – 21, 23 - 25, 27, 28 and 30-32, and 33 - 35 rejected under 35 U.S.C. 103(a) as being unpatentable over Kwantes et al. (US 4,308,404; JP 54-019951), Taylor et al. (US 2,486,342), Hachiya et al. (US 6,277,945) and Okamoto et al. (US 5,087,767); for the reasons set out in the Office Action mailed September 29, 2009 and as set out below.

11. The rejected claims cover, inter alia, a method for preparing bisphenol A, comprising the following steps: transferring phenol and acetone into a reaction zone charged with condensation catalyst, obtaining a stream containing bisphenol A after reaction; transferring the obtained stream containing bisphenol A into a rectification zone~ obtaining a product fraction primarily containing bisphenol A and phenol; and transferring the product fraction primarily containing bisphenol A and phenol into a crystallization zone to obtain a bisphenol A product; wherein a water-depleted fraction primarily containing phenol, bisphenol A and acetone and having a water content that is controlled at a level of not greater than 2% by weight is obtained from the rectification zone, and said water-depleted fraction is cooled and returned as a cycled stream to the reaction zone.

Dependent claims 15-21, 23 – 25, 27, 28, 30 – 32 further define the apparatus used in the process and other processing limitations. Dependant claims 33 – 35 further define the percent of acetone conversion and bisphenol A selectivity.

12. Applicant respectfully asserts that Okamoto et al. does not provide motivation for the combination of the Kwantes and Taylor references. Further, Applicant states that Okamoto et al. only provides motivation for removing water simultaneously or

alternatively with the reaction of phenol and acetone in a reaction zone and teaches away from recycling of reaction products to the reaction zone.

13. In response, the Examiner states that the prior art's mere disclosure of more than one alternative does not constitute a teaching away from any one of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed. (In re Fulton, 391 F.3d 1195, 1201, 73 USPQ2d 1141, 1146 (Fed. Cir. 2004). Okamoto et al. teaches another method for solving the problem identified by Applicant. The problem being; reduced reaction activity caused by water formed during the reaction. (see Okamoto et al. col. 2, lines 5 - 23). Okamoto's process removes a part of the water generated during the reaction through pervaporation method, making it possible to inhibit the reduction in the catalytic activity due to water generated during the reaction to enhance the acetone conversion. (see Okamoto et al. col. 3, lines 33 - 44). The Examiner cited the Okamoto et al. reference to show that it was well known in the art at the time of Applicant's claimed invention that water generated in the reaction to produce bisphenol A from phenol and acetone had a detrimental affect on the continued reaction activity. Thus, one skilled in the art, viewing the process of Kwantes et al. and desiring to reduce the amount of water generated in the reaction zone produce during the reaction, seeking to solve the same problem of Okamoto et al. (in order to increase acetone conversion and bisphenol A selectivity) would have looked to all known water separation means available in the art at the time Applicant's claimed invention. One such means having such use, is the rectification zone taught by Taylor et al.

"The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference.... Rather, the test is what the combined teachings of those references would have suggested to those of ordinary skill in the art." In re Keller, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981). See also In re Sneed, 710 F.2d 1544, 1550, 218 USPQ 385, 389 (Fed. Cir. 1983) ("[I]t is not necessary that the inventions of the references be physically combinable to render obvious the invention under review."). Therefore, it would have been obvious at the time of Applicant's claimed invention to remove water via a rectification zone.

Additionally, Applicant is reminded that the claims of an Application may be given their broadest interpretation. In this instance the rectification zone of Applicant's claimed invention could have a membrane therein. As such, the feature of using a rectification zone is within the general teaching of the art at the time of Applicant's claimed invention and thus obvious without a showing of unexpected results.

14. Applicant respectfully argues the differences between the teachings of Taylor et al. and Hachiya, and the claimed invention individually.

15. In response, the Examiner states one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. (In re Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); In re Merck & Co., Inc., 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986)). that Taylor is a process for the recovery phenols wherein a rectification zone is used to remove water. Further, Hachiya et al. discloses the use of a rectification column to purify phenol. Each of these references

clearly show the at the time of Applicant's claimed process the use of a rectification zone in process for fractionation of phenol products was known. The Examiner used these references to show that it would have been obvious to insert a rectification zone in the process of Kwantes et al. "The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference.... Rather, the test is what the combined teachings of those references would have suggested to those of ordinary skill in the art." In re Keller, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981). See also In re Sneed, 710 F.2d 1544, 1550, 218 USPQ 385, 389 (Fed. Cir. 1983) ("[I]t is not necessary that the inventions of the references be physically combinable to render obvious the invention under review."). Therefore, it would have been obvious at the time of Applicant's claimed invention to remove water via a rectification zone.

16. Applicant respectfully asserts that Okamoto et al. teaches away from recycling reactant products back into the reaction zone.

17. The Examiner states that Okamoto et al. was a secondary reference used to only show that the problem being solved by Applicant's claimed process was well known to those skilled in the art at the time of Applicant's claimed invention. Also, that one skilled in the art, viewing the process of Kwantes et al. and desiring to reduce the amount of water generated in the reaction zone produce during the reaction, seeking to solve the same problem of Okamoto et al. (in order to increase acetone conversion and bisphenol A selectivity) would have looked to all known water separation means available in the art at the time Applicant's claimed invention. Variations of particular

work available in one field of endeavor may be prompted by design incentives and other market forces, either in same field or different one, and if person of ordinary skill in art can implement predictable variation, 35 U.S.C. §103 likely bars its patentability; similarly, if particular technique has been used to improve one device, and person of ordinary skill would recognize that it would improve similar devices in same way, then using that technique is obvious. *KSR International co. v. Teleflex Inc.*, 550 U.S. at ___, 82 USPQ2D 1385 (U.S. 2007). In this instance the predictable variation is the use of a rectification zone to remove water produced during the reaction so that acetone conversion could be increased.

18. Applicant respectfully asserts that, there comparative examples provided in the specification are close to the Kwantes process. Specifically, stating that the acetone conversion percentage and bisphenol A conversion rates are significantly higher. In response, the Examiner notes that in the comparative Examples of Applicant's specification there does not appear to be any significant difference between the acetone conversion level and selectivity of Example 1 and Comparative Example 1. As such, the limitation of controlling the water level to not greater than 2% does not appear to produce an unexpected results, when viewed in light of the teaching of Kwantes et al. Specifically, the fact that Example 1 of Kwantes et al., where the water was drained off, has a higher level of conversion than Examples 2 - 4. The Examiner noting that the difference in conversion percentages is not very significant between Kwantes et al. Example 1 and Examples 2 - 4.

A reference is good not only for what it teaches by direct anticipation but also for what one of ordinary skill in the art might reasonably infer from the teachings. (*In re Opprecht* 12 USPQ 2d 1235, 1236 (Fed Cir. 1989); *In re Bode* 193 USPQ 12 (CCPA) 1976). In light of the forgoing discussion, the Examiner concludes that the subject matter defined by the instant claims would have been obvious within the meaning of 35USC 103(a). From the teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole was *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

Conclusion

19. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to YATE' K. CUTLIFF whose telephone number is (571)272-9067. The examiner can normally be reached on M-TH 8:30 a.m. - 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel M. Sullivan can be reached on (571) 272 - 0779. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Yaté K. Cutliff/
Patent Examiner
Group Art Unit 1621
Technology Center 1600

/SHAIENDRA KUMAR/
Primary Examiner, Art Unit 1621